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Valence Technology, Inc.
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January 21, 2003

RSPA-02-13658-19

Via Federal Express

Docket Management System
U.S. Department of Transportation
Room PL 401
400 Seventh Street, SW
Washington, DC 20590-0001

Re: Docket Number RSPA-2002-13658 [HM-215E]
Comments on Proposed Harmonization Rulemaking

Dear Sir or Madam:

Valence Technology, Inc. ("Valence") is pleased to submit the following comments specifically on the Department of Transportation's Research and Special Programs Administration (RSPA) notice of proposed rulemaking (NPRM) for Harmonization with the United Nations Recommendations, International Maritime Dangerous Goods Code, and International Civil Aviation Organization's Technical Instructions published in the December 3, 2002 *Federal Register*. (67 Fed. Reg. 72033), Docket Number RSPA-2002-13658 [HM-215E].

We also urge that these comments be considered by RSPA with regard to its regulation of lithium and lithium ion batteries in general, including its proposed rule to amend the Hazardous Materials Regulations (HMR) regarding the transportation of lithium batteries that were published in the Federal Register on April 2, 2002. (67 Fed. Reg. 15510), particularly because, as RSPA states in the harmonization NPRM, "Any amendments adopted in either final rule will be reflected in the other." (67 Fed. Reg. 72043).

Valence is a small, U.S.-based lithium ion battery manufacturing company with facilities in Austin, Texas, Henderson, Nevada and Mallusk, Northern Ireland and is among the dwindling number of U.S. companies in the rechargeable battery field competing against the large Japanese and Asian companies that dominate the field. Valence is concerned with several changes in the proposed harmonization rule and with RSPA's proposed lithium battery rule. We believe that the changes proposed in these two regulations would have a significant and adverse economic impact on our small business and place it at a distinct disadvantage over our large Japanese and Asian battery competitors. Valence's issues of concern are summarized below.

Lithium and lithium ion batteries are used in portable electronic devices including laptop computers, personal digital assistants, cellular phones and cordless phones. These portable electronic devices require portable rechargeable batteries in order to work as designed. Advances in portable electronic devices drive improvements in portable rechargeable batteries and *vice versa*. Worldwide demand for these increasingly sophisticated electronic devices continues to increase as do the demands for new, more powerful batteries to operate them.

> "With sales of gadgets from cellphones to hand-held computers having slowed in the past few years, manufacturers have been incorporating a host of new features to attract customers, such as color screens in cellphones and digital cameras in hand-held organizers. But this greater functionality usually comes at a price: lower battery life. That has put new urgency behind the search for better power sources."[1]

Some estimates are that the worldwide portable electronic device market is over $150 billion annually, increasing at rates greater than 20% annually. There were approximately one billion cellular phones used worldwide in 2002. Demand also continues for replacement batteries for older electronic devices still in use. Demand for portable rechargeable batteries increases about 10% each year, with the greatest recent demand increase for smaller, more powerful batteries. In just the past few years, lithium ion batteries have become the most popular of the portable rechargeable batteries because of their lightweight design and higher energy density. Lithium ion batteries now make up approximately 50% of the rechargeable battery market. The 2002 worldwide market for portable rechargeable batteries was about $2 billion for the approximately 1.5 billion units produced, approximately 95% of which are manufactured overseas.

> "By 2006, some analysts estimate, the market for rechargeable power will double to $9 billion. "There is power gap looming in the next four to five years," says Alfred Pan, a project manager for emerging technologies at H-P Labs. "By then, devices that you could use for an hour straight will incorporate so many new technologies that their power will only last them 20 minutes."[2]

Currently, there are approximately 30 portable rechargeable battery manufacturers and assemblers in the United States some of which are publicly traded, some are closely held and some are family owned. These companies have combined annual sales of around $325 million dollars and employ about 1700 employees. Valence, with less than 100 employees within the United States, is one of these companies.

Valence has recently developed a new lithium ion battery called the N-Charge Battery Pack and within the last year has begun to sell this battery in the United States and internationally. We believe that the N-Charge Battery Pack has distinct safety advantages over

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[1] "Gadget Makers Join the Scramble to Zap the 'Power Gap'", The Wall Street Journal, January 16, 2003, page B1.

[2] Id.

primary lithium batteries and other lithium ion batteries. It is also the first lithium ion battery based upon phosphate technology designed to provide greater safety while providing a performance profile capable of powering the newest electronic devices.

Primary Lithium Batteries. Primary lithium batteries, i.e., non-rechargeable batteries that contain metallic lithium, have had safety incidents during transportation. We are aware of only two: the two cited in the April 2002 proposed rule for lithium batteries. One measure of the danger posed by primary lithium batteries is the amount of metallic lithium in the battery. A transportation incident involving a primary lithium battery fire is problematic because it may expose metallic lithium to water which can make extinguishing such a fire difficult. Still, of the tens of millions of lithium and lithium ion cells and batteries transported internationally over the past 10 years, we are aware of only the two shipping incidents involving *primary* lithium batteries as noted above.

Rechargeable Lithium ion Batteries. Rechargeable lithium ion batteries are chemically distinct from primary lithium batteries. Lithium ion batteries:

- Do not contain metallic lithium or lithium alloys;
- Are significantly less reactive than primary lithium batteries;
- Are more thermally stable than primary lithium batteries; and
- Are shipped at a reduced state of charge, generally at 30-50%, which makes them inherently safer in transport. (Primary lithium batteries are shipped at 100% state of charge.)

In its HMR, RSPA has used the amount of lithium metal (in grams) as a measure of the shipping risk for primary lithium batteries. Because lithium ion batteries do not contain metallic lithium or lithium alloys, in the lithium battery rules promulgated by RSPA since 2001, RSPA has used an "equivalent lithium content" formula for regulating lithium ion batteries and determining what batteries should be excepted from regulation. We are not aware of any studies or tests that demonstrate RSPA's equivalent lithium content concept is the sole or even the best means of evaluating the danger posed by lithium ion batteries in transport. In addition, we are not aware of any incidents involving the transport of lithium ion batteries. However, because Valence's lithium ion batteries have always qualified for the exceptions provided in the HMR for lithium ion batteries, we have not objected to the use of this equivalent lithium content concept.

The April 2002 proposal. Currently, under the HMR, lithium ion batteries with less than 25 grams of equivalent lithium content are provided an exception from classification as a Class 9 hazardous material when certain important requirements are met, i.e., that these batteries pass stringent UN Tests for transportation. Because our lithium ion batteries, including the N-Charge Battery Pack, currently fall within this exception, how RSPA has regulated lithium and lithium ion batteries has been of little direct concern to us. (Our N-Charge Battery Pack has 12 grams of equivalent lithium content.) However, citing the two fires involving certain types of *primary* lithium batteries at U.S. airports in 1999 and 2000[3], and the advantages of harmonizing international transportation regulations, in April 2002, RSPA proposed changes to these

[3] Both of these fires concerned primary lithium batteries, not rechargeable lithium ion batteries.

regulations that would bring the full burden of these regulations to bear upon our batteries.[4] (*See* 67 Fed. Reg. 15510).

If the changes proposed for the HMR go into effect, lithium ion batteries containing more than 8 grams of equivalent lithium content no longer will be excepted from regulation under 49 CFR § 173.185. As a result, for the first time, Valence's N-Charge Battery Pack would be required to be transported as a Class 9 hazardous material, which for Valence and its customers would be expensive and burdensome, would undercut in the marketplace the significant safety advantages these batteries provide, and, in our view, would not improve transportation safety.

We had hoped that the ongoing reevaluation of the hazards posed by lithium and lithium ion batteries in transportation that was initiated by RSPA in September 2000, would demonstrate that substantial technological and safety advancements have been made to lithium ion batteries that could obviate the requirement for a Class 9 designation for these batteries. One such development over the past few months has been the development and commercialization of our SAPHION™ phosphate technology in the N-Charge Battery Pack. Apparently, RSPA intended to use this reevaluation as the basis for changes to its regulations, but decided that they would propose these changes without having completed the reevaluation. "[W]e believe that it is in the best interest of safety and international commerce to amend the HMR at this time based on the amendments to the UN Recommendations[5]." (*See* 67 Fed. Reg. 15512). This is unfortunate, especially in light of the FAA's recently completed tests on lithium and lithium ion cells and batteries and RSPA's testing on lithium ion batteries that was performed in 2001. The results from both testing programs clearly indicate that the hazards posed by lithium ion batteries in transport are negligible and certainly are significantly less than that posed by primary lithium batteries. (The results of the FAA tests can be found on the agency's website at www.faa.gov. Dr. Spencer Watson (RSPA) was responsible for RSPA's test and has copies of the results.)

Because of the proposal by RSPA to significantly narrow the exception for lithium ion batteries from 25 grams of equivalent lithium content to 8 grams, Valence is confronted with the full brunt of RSPA's regulatory provisions for its lithium ion batteries for the first time and requires us to challenge the bases for these various regulations, including the proposed harmonization rulemaking .

The harmonization proposal. Under the harmonization rule, RSPA is proposing to add Special Provision A54 that authorizes packages of Class 9 lithium/lithium ion batteries and lithium/lithium ion batteries contained in or packed with equipment to exceed the 35 kg (gross) weight limitation if shipped by cargo aircraft and approved by RSPA's Associate Administrator.

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[4] (*See* 67 Fed. Reg. 15510). RSPA has not yet promulgated a final rule concerning these proposals nor has it yet submitted a Paperwork Reduction Act approval request to the Office of Management and Budget (OMB) concerning these changes.

[5] The UN Recommendations are the 12th Edition of the UN Recommendations relative to the transportation of lithium batteries revised in December 2000. These revisions did not explain or provide the basis for the changes to the size exceptions for lithium batteries, the matter of concern to us.

It should be noted that the 35 kg (gross) weight limitation referenced in A54 would not appear applicable to lithium or lithium ion batteries *contained in equipment* since the current weight limitation on lithium or lithium ion batteries *contained in equipment* for passenger and cargo aircraft is 5 kg (mass).

Nonetheless, in light of the increasing demand for, and utilization of, larger lithium ion batteries in consumer applications and the absence of safety problems with transporting lithium ion batteries, it is unreasonable for RSPA to retain what appears to be a low package weight limitation of 5 kg for Class 9 lithium ion batteries packed with equipment and shipped by passenger aircraft. In addition, to require a shipper to secure an approval from the Associate Administrator to exceed the 5 kg weight limit or to require shipments only by cargo aircraft would be burdensome, time-consuming, and expensive. For example, it is our understanding that securing an approval from the US DOT on similar matters takes 3-4 months. It will be particularly expensive for Valence as a result of RSPA's proposed change to the lithium battery regulations by which lithium ion batteries containing more than 8 grams of equivalent lithium content will require a Class 9 designation. Valence, like many other small lithium ion battery companies in the U.S., manufactures consumer lithium ion batteries that contain more than 8 grams of equivalent lithium content. For example, Valence currently is shipping in the U.S. its consumer "N-Charge" battery pack that contains 12 grams of equivalent lithium content as an excepted material under the HMR since it passes all of the required UN Tests. To require that the N-Charge battery pack be shipped as a Class 9 hazardous material would place unrealistically low package weight limitations when these batteries are packed with consumer equipment and shipped by air. Further, to require an approval to exceed the 5 kg package weight limitation when shipping by passenger aircraft would be a substantial economic impact for Valence and the industry.

RSPA also is proposing to add Special Provision A55 to authorize prototype batteries and cells that are packed with not more than 24 cells or 12 batteries per package that have not completed the test requirements in Sub-section 38.3 of the UN Manual of Tests and Criteria, to be transported by cargo aircraft, if approved by the Associate Administrator. Every day, hundreds of lithium ion prototype cells and batteries are shipped around the world for testing in products. Manufacturers of equipment that utilize lithium ion batteries often request on short notice (2 or 3 days) prototype lithium ion cells and batteries for testing in new products. Manufacturing such prototypes is a tedious and expensive process. To place this additional burden of securing an approval to ship prototypes and requiring shipment by cargo aircraft is unrealistic in light of the time sensitive nature of shipping prototypes. A55 also is inconsistent with Special Provision 310 in the UN Model Regulations and Special Provision A88 in the ICAO Technical Instructions. (SP A88 allows the use of passenger aircraft and SP 310 does not require an approval when shipping prototypes.)

Inadequate basis for some of the proposals. In summary, we do not believe that there is a sufficient basis in the rulemaking record for either the April 2002 proposal or for the harmonization proposal for RSPA to change the current exception for lithium ion batteries that contain between 8 and 25 grams of equivalent lithium content, such as Valence's N-Charge Battery Pack. Furthermore, we do not believe that either rulemaking record provides a sufficient

basis for the regulation of rechargeable lithium ion batteries, such as Valence's N-Charge Battery Pack, as if rechargeable lithium ion batteries were primary lithium batteries. And, we do not believe that either rulemaking record provides a sufficient basis for the regulation of lithium ion batteries, such as Valence's N-Charge Battery Pack, because of safety concerns. In fact, we believe that lithium ion batteries such as Valence's N-Charge Battery Pack are just as safe, or safer, than certain primary lithium batteries that would continue to be excepted from regulation by RSPA's proposals. (Attached to these comments is information on the N-Charge Battery Pack (and component cells), its composition, and chemistry.)[6]

We believe that RSPA should complete its ongoing reevaluation of the hazards posed by lithium ion batteries in transportation and use that reevaluation as the basis for any changes to the current regulations. We believe that this reevaluation will show that with regard to safety matters, particularly those associated with fires, impacts, overcharging, temperature variances and short circuits, there are significant differences among lithium ion batteries. We strongly believe that our N-Charge Battery Pack is the safest lithium ion battery available on the market today. It was designed and developed to address the concerns that have led RSPA to regulate the transportation of lithium ion batteries. Again, our N-Charge Battery Packs --

- Are virtually fireproof;
- Do not release oxygen gas upon decomposition as readily as cobalt oxide based lithium ion batteries;
- Do not propagate a fire under abusive electrical, environmental, or mechanical conditions;
- Do not short-circuit upon impacts of much greater force than current tests require; and
- Are very stable in temperature variance tests.

Regulatory Analyses. RSPA makes several assertions in the preamble of the proposed harmonization rule and in the April 2002 proposed rule that we do not believe are correct. First, RSPA asserts that these proposed changes will not have a significant economic impact on a substantial number of small businesses and entities and, therefore, no analysis in accordance with the Regulatory Flexibility Act, 5 U.S.C. 601-611, is required. We disagree. We are a small, U.S. based company with less than 100 employees and the changes RSPA has proposed will have a significant economic impact upon us and the marketplace in which we compete. We know that there are other small U.S. businesses that will be adversely affected by these proposed changes. You may not receive comments on this proposed rule from most of them, but they are certainly operating in the U.S and will feel the impact of these new regulations. These additional costly regulatory burdens that RSPA is proposing to implement as part of the HMR will have long-term

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[6] Additional information on the N-Charge Battery Pack is available in Valence's request for exemption from the U.S. Hazardous Materials Regulations (HMR) that was filed on November 18, 2002 with Mr. Robert A. McGuire, Associate Administrator for Hazardous Materials Safety at RSPA. The exemption would allow Valence to ship its lithium ion N-Charge Battery Pack in accordance with the certain packaging specifications as described in the request for exemption rather than as a Class 9 hazardous material. The exemption would be needed if RSPA promulgates a final rule for lithium batteries that narrows the exception for lithium ion batteries from 25 grams of equivalent lithium content to 8 grams. This request for exemption is still pending.

economic consequences for Valence and other U.S-based lithium ion battery manufacturers, especially small businesses.

RSPA states in the harmonization NPRM that its certification that this proposal is not subject to the Regulatory Flexibility Act, is subject to modification as a result of a review of comments received in response to this proposed rulemaking. We believe that the proposed harmonization rule and lithium battery rule should be analyzed by RSPA in accordance with the requirements of the Regulatory Flexibility Act because these proposed regulations will have a significant economic impact on all of the small U.S. businesses and entities manufacturing and assembling for distribution lithium and lithium ion batteries.

In this regard, we agree with comments on RSPA's April 3, 2002 lithium battery NPRM filed by FEDCO Electronics, Inc., dated June 13, 2002. (That letter is attached hereto.) The letter sets forth the significant and adverse impact that RSPA's proposals would have on FEDCO, which is also a small business. The FEDCO letter states, in part, that –

> "There are approximately thirty other similar value added distributors in the United States all of which are closely held and many, like our company, are family owned. My estimate is that these companies have combined annual sales of around $325 million dollars and employ in the neighborhood of 1700 employees."
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> "Fedco is a family owned small business that manufactures and distributes exact replacement lithium primary and rechargeable battery packs. Our major competition is from importers who source most of their batteries from Taiwan, Hong Kong and China. We are constantly under pricing pressure from these sources. Although while we seem to retain market share by offering same day shipping, high quality products and an excellent warranty, the issue of price is still very close to the top of the buyers list. As mentioned earlier, we are just one of 30 peer companies here in the U.S., all with the same concerns."
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> "Conservative estimated costs of having an independent testing facility, like UL, perform the proposed RSPA tests would be about $20,000.00 per battery plus the cost of the samples submitted. That's $660,000.00 for just the testing which, by the way, is about how much we're spending this year on new product development. To test our 450 existing primary and secondary battery designs by January, 2005 will cost about nine million dollars! To require our company and the other U.S. value added distributors to comply with this proposal would be to destroy our industry!"

Second, RSPA asserts for both proposed rules that they will have only a modest increase in annual paperwork burden and cost. This statement is not correct, particularly for our

customers who would be subjected to the full panoply of RSPA HMR requirements for the first time because of the proposed reduction of the exception level from 25 grams of equivalent lithium content to 8 grams. These include, but are not limited to, training employees to label, handle and ship hazardous materials, new PG II packaging for our products, seeking RSPA approvals, and additional fees for shipping hazardous materials. For Valence and other small businesses in particular, these proposed changes would mean substantial and costly new requirements that are subject to the Paperwork Reduction Act. They will also have significant down-stream effects for those we hope will purchase our lithium ion batteries (electronic equipment manufacturers, distributors, and retailers) because they too would have to label, keep records and ship our batteries as Class 9 hazardous materials. For example, the added costs and paperwork required for Class 9 shipping imposed on our potential customers could lead to a delay in adoption of a new technology (such as Valence's SAPHION™ phosphate technology) specifically designed to address safety concerns that gave rise to the promulgation of the safety regulations.

In accordance with the Paperwork Reduction Act, as amended, both RSPA and the Office of Management and Budget are required to ensure that for each proposed requirement for additional paperwork upon the public by federal agencies that, among other things --

> "Before approving a proposed collection of information, the Director shall determine whether the collection of information by the agency is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility. Before making a determination the Director may give the agency and other interested persons an opportunity to be heard or to submit statements in writing. To the extent, if any, that the Director determines that the collection of information by an agency is unnecessary for any reason, the agency may not engage in the collection of information." 44 U.S.C. 3508.

Because the rulemaking records here involved do not set forth any basis for the regulation of lithium ion batteries such as Valence's N-Charge Pack, the collection of information to enforce these provisions is unnecessary and will have no practical utility within the meaning of the Paperwork Reduction Act because these batteries do not present safety problems in transportation or use.

We also believe that RSPA's estimates of the number of respondents that would be affected by these proposals and the burdens imposed upon them are unrealistically low. As noted above –

- approximately 1.5 billion portable rechargeable batteries were manufactured last year;
- about one-half of those were lithium ion batteries;
- about 20% of the worldwide production of lithium ion batteries is shipped in or to the United States;
- the market for lithium ion batteries is growing at about 10% annually;
- demand for more powerful lithium ion batteries is growing even faster;

- each of these lithium ion batteries will be shipped at least once and often several times by our customers and theirs[7]; and
- RSPA's proposals will eliminate the current exception from regulation as a Class 9 hazardous material for a large and growing segment of the lithium ion market.

Third, RSPA asserts that these proposed rules would not be a significant regulatory action under section 3(f) of Executive Order 12866 or under the Regulatory Policies and Procedures of the Department of Transportation (44 Fed. Reg. 11034) because (1) the industry is already complying with the proposed new requirements on a voluntary basis and, therefore, there are no appreciable new costs; (2) the testing of currently manufactured batteries or cells would not be required until January 1, 2005; (3) since most of the batteries covered by these proposals are manufactured outside of the U.S. and transported in to the U.S., most of the costs will be borne by these manufacturers; and (4) the batteries manufactured in the U.S. are already covered under the ICAO Technical Instructions. RSPA concludes that "... the costs associated with these proposals are negligible." In addition, RSPA asserts that there are benefits to these proposed rules, including: (1) enhanced transportation safety; and (2) consistency of domestic and

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[7] See, for example, comments filed by Intel on RSPA's proposed April 2002 NPRM, dated June 10, 2002, including "...this will be the first time that many companies in the electronic industry will face regulation of their product containing small, otherwise excepted lithium batteries. Based upon our analysis presented below, Intel believes that the costs to the "non-battery" electronics manufacturing industry will be significant. As an example, Intel shipped over 9 million motherboards containing small lithium batteries in 2001. This is only one of many products that Intel transports containing small lithium batteries. Based on this volume, Intel would incur the following new costs under proposed regulation §173.185(d)(l)(v):

- Increased Packaging Costs: While the strong outer packaging currently used adequately protects the product from damage incidental to transportation, and more importantly, the internal packaging design prevents the product from short-circuiting in transit, the outer packaging currently will not satisfy a 1.2 meter drop test.
- Package Marking: Markings affixed on each package.
- Training: Nearly 1000 distribution center employees will now be defined as "hazmat employees" due to loading, unloading and handling the regulated lithium batteries contained in equipment. All would need to be trained.
- Hazmat Surcharge: Most carriers have pricing structures that add additional costs to regulated hazmat shipments. Although RSPA does not propose to regulate these otherwise excepted batteries contained in equipment as a hazard class per se, the carriers will likely view the shipments as restricted articles. The result is a hazmat surcharge applied to these shipments
- Intangibles: Many carriers refuse to transport regulated hazmat or do not have the infrastructure to transport hazmat. Carrier selection strategy for this product could be severely limited and reduce the competitive advantage that currently exists for non-regulated freight.
- Unknown Costs: Warehouse building codes often require additional, costly life- safety and spill containment features for hazmat storage. Building insurance costs are expected to increase for hazmat storage.

The total new costs to Intel for transporting just this one product in compliance with RSPA's proposed regulation 8 173.185(d)(l)(v) are estimated to ***exceed 2 million dollars per year.*** This would be a ***significant*** new cost increase to Intel's global transportation of this small lithium battery-containing product. Moreover, this cost would be incurred for products that, to Intel's knowledge, have no history of safety issues due to the presence of lithium batteries." (Intel letter attached.)

international standards. The harmonization rule includes provisions affecting a large number of products. The assertion that these proposals are not significant does not specifically discuss the proposals concerning lithium and lithium ion batteries, and instead asserts that the total net increase in costs to businesses for all of the products covered by this rulemaking is considered to be so minimal as to not warrant preparation of a regulatory impact analysis or regulatory evaluation. It cannot be U.S. regulatory policy that if a smaller regulatory change with catastrophic impact upon one industry is packaged with many more changes with an overall positive regulatory impact upon many other industries, that the effect on that industry can be ignored.

> Among other things, Executive Order 12866 requires, in Section 1, that –
> (1) Each agency shall identify the problem that it intends to address (including, where applicable, the failures of private markets or public institutions that warrant new agency action) as well as assess the significance of that problem;
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> (7) Each agency shall base its decisions on the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation.
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> (11) Each agency shall tailor its regulations to impose the least burden on society, including individuals, businesses of differing sizes, and other entities (including small communities and governmental entities), consistent with obtaining the regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations.
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> Section 3(f) of the Executive Order provides that --
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> "Significant regulatory action" means any regulatory action that is likely to result in a rule that may:
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> 1. Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
> 2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
> 3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
> 4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive order.

Although RSPA asserts that these proposed regulations are not significant, we disagree. Again, we agree with the comments by FEDCO Electronics, Inc., which expresses concern for the survival of this industry.

RSPA asserts that the industry is already complying with the proposed new packaging and hazard communication requirements on a voluntary basis and, therefore, there are no appreciable new costs. This is not correct. While most of the large lithium and lithium ion battery companies (Sony, Sanyo, Panasonic, Energizer, Duracell) shipping batteries in the U.S are participating in the voluntary program, it appears most small U.S. lithium and lithium ion battery manufacturers and assemblers are not. Therefore, the new testing requirements, packaging and hazard communication requirements, and Class 9 designation for lithium ion batteries containing more than 8 grams of equivalent lithium content will impose a significant burden on small battery manufacturers and assemblers.

RSPA asserts that the testing of currently manufactured batteries or cells would not be required until January 1, 2005. This is true, but is not a basis for concluding that the requirement is not significant. Compliance with these proposals would be very significant for us and for others.

RSPA asserts that since most of the batteries covered by these proposals are manufactured outside of the U.S. and transported in to the U.S., most of the costs will be borne by these manufacturers. This is also accurate since approximately 95% of these batteries are manufactured outside of the United States, but these large, foreign companies would be better able to pay and pass on the costs of these new requirements than will the small, U.S.-based companies. For them, the costs are probably digestible; for us, they would be catastrophic.

RSPA asserts that batteries manufactured in the U.S. are already covered under the ICAO Technical Instructions. That is also accurate, but the hazardous materials transportation regulations that are enforced in the U.S. are based on the HMR (49 CFR), not the ICAO Technical Instructions.

And finally, RSPA asserts that there are benefits to these proposals, including (1) enhanced transportation safety; and (2) consistency of domestic and international standards. We disagree. There is no basis to conclude that the regulation of lithium ion batteries such as our N-Charge Battery Pack as proposed by RSPA will enhance transportation safety at all. We have never had an incident or fire involving the transport of our batteries, and the rulemaking records do not reference any instances of fire or safety hazards in the transportation of lithium ion batteries.

We agree that it is desirable to have consistent domestic and international standards[8], but not at a cost as great as would be incurred as a result of these rulemakings. Furthermore, the

[8] Some interested parties that have commented on RSPA's proposals believe that some of the proposals would be inconsistent with international regulations and effectively encumber international commerce. (See, for example, the comments by Intel, attached to this letter.)

desire for consistent domestic and international standards cannot satisfy the requirement for a rational basis for these rules. It would be better, in our view, to base the regulations for lithium batteries on good safety information and experience and work with our trading partners to conform their regulations around sound regulatory data.

We believe that these proposed rulemakings are significant within the meaning of Executive Order 12866, and that they are inconsistent with the principles set forth in the Order and with the Regulatory Flexibility Act and the Paperwork Reduction Act.

Valence therefore requests that RSPA do the following:

1. Retain the exception for lithium ion batteries containing between 8 and 25 grams of equivalent lithium content as currently provided in the regulations under 49 CFR § 173.185. An alternative would be to incorporate a small quantity exception into the HMR for the shipment of up to ten consumer lithium ion batteries containing not more than 25 grams of equivalent lithium content in a single package;
2. The exceptions noted above for lithium ion batteries that contain between 8 and 25 grams of equivalent lithium content should be applicable to consumer lithium ion batteries packed with equipment and shipped by passenger aircraft without the requirement for an approval from the Associate Administrator;
3. Allow the use of passenger aircraft for shipping prototype cells and batteries in small quantities under SP A55 in order to be consistent with international air transportation regulations; and
4. Base any proposed changes to the current rules on the ongoing reevaluation of lithium ion batteries that RSPA has initiated.

Thank you for the opportunity to provide these comments on RSPA's proposed rulemakings. If you have questions regarding these comments, please contact me at (702) 558-1073.

Sincerely,

Roger Williams/sam

Roger Williams
Vice President Law and General Counsel

cc: John Gale, RSPA

Valence Technology, Inc.

N-Charge™ Power System

Want One?

TECHNOLOGIES

SOLUTIONS

N-Charge™ Power System
Products
Markets
Applications Notes

LICENSING

TESTIMONIALS

NEWS

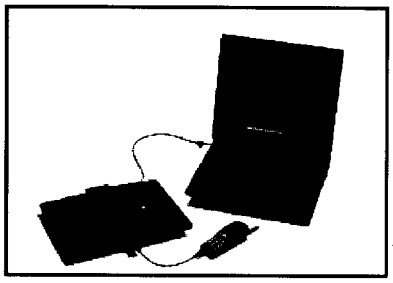
INVESTOR INFO

COMPANY

Anytime, anywhere power!

The N-Charge™ Power System is a revolutionary, rechargeable battery system featuring Valence's breakthrough Saphion™ Technology. This stand-alone tool provides easy-to-use, anytime, anywhere power for a wide variety of portable electronic devices. The N-Charge Power System allows you to charge your notebook computer and handheld electronic device simultaneously! For even greater flexibility, the N-Charge Auto Adapter is specially designed to be compatible with a variety of portable devices which are already equipped with car adapters.

Get the most out of travel time!



With the N-Charge Power System's massive energy potential, you can operate your notebook computer continuously from San Francisco to Tokyo. Work on presentations for hours or watch up to three DVD's in a row, flicker-free. On just one charge of the N-Charge Power System, you can talk on your cell phone or use your PDA non-stop for days.

Reduce baggage and bulk!

The N-Charge Power System's exceptional run time eliminates the need to carry a second notebook battery and frees up that device bay for use with other accessories such as DVD drives. The N-Charge Power System's built-in multi-device capability lets you leave all of those cumbersome, individual handheld device and phone adaptors behind. The sleek, ultra-thin N-Charge Power System slides conveniently into a briefcase or computer bag for effortless portability.

N-Charge Power System Features:

- Saphion™ Lithium-ion Technology
  - High performance, low cost batteries
  - Environmentally friendly, no heavy metals
  - No memory effect
- Excellent Run Time
  - Up to 10 hours continuous notebook computer operation* or
  - Recharge your cell phone numerous times
- Unmatched Versatility
  - Capable of accommodating a wide variety of notebook PC's, cell phones, PDA's, etc.
  - Simultaneous charging of two mobile devices
- Superior Recharge and Long Life Cycle Capability
  - Fast recharge time: 2 to 4 hours
  - Cycle life of over 600 charge-discharge cycles to 70% capacity
- Ease of Use
  - No need for individual handheld device adaptors
  - Versatile Auto Adapter is compatible with a variety of devices already equipped with car adapters
- Slim, Sleek Design
  - 13 mm thin, 300 mm long, 230 mm wide
  - Easy fit for briefcase or computer bag
- Flicker-Free Viewing
  - Notebook display operation mimics AC mode
  - No dimming due to detection of battery power source

* May vary depending on N-Charge™ Power System Model, mobile device and/or usage pattern.

The N-Charge™ system is compatible with a variety of laptop brands and models. For a detailed compatibility guide, please click here.

Download N-Charge™ Specifications in PDF format
Download the N-Charge™ Product Manual in PDF format

N-Charge™ Specifications

Feature	Model VNC-130	Model VNC-65
High power port voltage	16-24 V DC	16-24 V DC
Low power port voltage	5-12 V DC	5-12 V DC
Capacity	10 Ah	5 Ah
Energy	120-130 Wh	60-65 Wh
Charge time (typical)	3- 4 hours	2-3 hours
Thickness	13 mm/.5118 inches	13 mm/.5118 inches
Length	300 mm/11.81 inches	300 mm/11.81 inches
Width	230 mm/9.055 inches	230 mm/9.055 inches
Weight	1.35 kg/2.976 lbs.	.886 kg/1.764 lbs.
Cycle Life	> 600 to 70% capacity	> 600 to 70% capacity

Want One?

Valence Technology, Inc.

Saphion™ Technology

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Valence has been focused on the creation of safe, cost-effective battery technologies for a number of years. Our Saphion™ Lithium-ion technology is the most recent and exciting fruit of these efforts. It utilizes natural, phosphate-based cathode material and offers the greatest combination of energy, cost, safety and environmental characteristics. Saphion technology energy solutions are suitable for a variety of applications in the consumer, communications, industrial and automobile industries.

Key Features:

- High Energy Density
- Low Cost
- Unrivaled Safety
- High Efficiency
- Environmentally Friendly

Our Saphion technology capitalizes on the energy density and efficiency of Lithium-ion with a number of added benefits, including excellent cost/performance characteristics.

Valence's phosphate-based Saphion technology possesses safety characteristics that are fundamentally superior to those of Lithium-ion technology made with other cathode materials. The breakthrough feature of Saphion technology is its exceptional thermal and chemical stability. This unique chemical property renders Saphion technology energy solutions incombustible in the event of mishandling during charge or discharge. Saphion technology is extremely stable under overcharge or short circuit conditions and has the ability to withstand high temperatures without decomposing. When abuse does occur, the phosphate-based cathode material will not burn and is not prone to thermal runaway.

Our Saphion Lithium-ion technology is composed of **environmentally friendly materials,** including natural, phosphate-based cathode material. In addition, Saphion technology systems **do not exhibit the "memory effect"** of Nickel-Cadmium and Nickel-metal Hydride solutions. They demonstrate excellent shelf life, long cycle life and are completely maintenance free.

Saphion technology can be used in wound cylindrical, wound prismatic and polymer battery construction types, among others. When combined with Valence's patented "stacked" polymer technology, it offers increased design flexibility and stability. Not only can Saphion technology be manufactured to fit small applications, but its lower cost opens the door to market development for large cells. Large cells are ideal for many high energy, high power applications such as remote power supplies, load leveling systems and vehicles. In these applications, the use of fewer, larger individual cells within each battery reduces the costs associated with assembly, control and safety circuitry.

Learn more about the phosphates in Valence's Saphion technology...

Valence Technology, Inc.

Frequently Asked Questions about Valence Phosphates

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Why is Valence using phosphates in its batteries?

Phosphates are a superior technology relative to many battery alternatives available today. The goal of Valence Technology is to offer our customers safe, low-cost, high performance energy solutions, and phosphate technology affords us this opportunity. Phosphates allow us to capitalize on the energy density and efficiency of Lithium-ion with the added benefits of reduced costs, unrivaled safety and environmentally friendly features.

How do batteries made with the Li-ion phosphate chemistry compare to Cobalt batteries?

Batteries made with Lithium-ion technology provide excellent energy density and efficiency. Polymer technology adds size flexibility and stability. Unfortunately, the use of Cobalt creates serious trade offs, limiting market penetration beyond small batteries for the high-tech industry. Phosphates significantly reduce the drawbacks of the Cobalt chemistry in terms of cost, safety and environmental characteristics. At the pack level, it is expected that a phosphate cylindrical battery will cost 45% less than a Cobalt cylindrical battery for only 14% less energy density. Additionally, phosphates provide unrivaled safety due to their thermal stability and environmentally friendly features.

In order to reduce cell costs and improve safety, phosphates can be used in wound cylincrical, wound prismatic or polymer construction methods. When combined with Valence's stacked polymer tchnology, phosphates offer the ability to create very large footprint batteries. In turn, end product manufacturers are given a powerful new way to differentiate and increase the value of their designs.

What are the benefits of using batteries made with phosphates?

Phosphates deliver the ultimate combination of energy, cost, safety, and environmental characteristics. Due to the superior safety characteristics of phosphates over current Lithium-ion Cobalt cells, batteries may be designed using larger cells and potentially with a reduced reliance upon additional safety devices. Compared to NiMH and Lead-acid, a significant battery weight and volume reduction can be expected, as well as the elimination of environmental concerns due to heavy metals. Combined with lower cell material costs, real cost savings can be accumulated in a battery system designed with phosphates.

What applications are phosphate batteries best suited for and why?

Phosphate batteries are best suited to situations where cost, safety and cell size restrictions prohibit the use of the traditional Cobalt chemistry, where the weight of NiMH or Lead-acid is prohibitive and where low battery maintenance is crucial. These applications include distributed back up power, load leveling, electric vehicles, computers, toys, appliances, power

tools, etc.

What is the cycle life and how long should phosphate batteries last in everyday use?

Phosphates cycle similar to conventional Lithium-ion Cobalt cells, over the temperature range of -20°C and 60°C. Phosphates exhibit excellent shelf life, like that of the conventional Lithium-ion Cobalt battery. Unlike NiCd and NiMH, phosphates exhibit no memory effect, so they can be partially discharged or charged and stored for prolonged periods of time without impact on cycle life or cell capacity.

Why are batteries made with phosphates considered safer than other battery technologies?

The unique chemical properties of the phosphates are such that they are incombustible if mishandling occurs during charging or discharging. In addition, phosphates are much more thermally stable under these abuse conditions than are the materials used in conventional Lithium-ion Cobalt batteries. In brief, phosphate cells have a much higher onset temperature for decomposition and when abused will not be prone to thermal runaway.

FEDCO®
FEDCO ELECTRONICS, INC.

1363 Capital Drive - Fond du Lac, WI 54936-1403 - U.S.A.
Phone: 1-920-922-6490 Fax: 1-920-922-6750
E-Mail: info @ fedcoelectronics.com

June 13, 2002

Docket Management System
U.S. Department of Transportation
Room PL401
400 Seventh Street - S.W.
Washington, DC 20590-0001

via e-mail
&
overnight letter

Reference: Docket Number RSPA-02-11989 (HM-224C)
Comments: Impact on Small Business per the Regulatory Flexibility Act.

Dear Sir or Madam,

Our company, Fedco Electronics, Inc. (Fedco) wishes to submit the following comments on the Department of Transportation Research and Special Programs Administration (RSPA) notice of proposed rulemaking for lithium cells and batteries which was published in the April 2, 2002 *Federal Register.*

Fedco is a member of the Portable Rechargeable Battery Association (PRBA) and, in fact, I am a member of the battery industries' Voluntary Air Transportation Communications Program ad-hoc committee that consists of member companies of the PRBA, the National Electrical Manufacturer's Association (NEMA) and the Battery Association of Japan (BAJ).

Both PRBA and NEMA have submitted responses that address specific paragraphs in the proposed rulemaking. Fedco supports their responses and will not specifically comment on those items herein. Instead, I wish to submit comments on the significant cost impact that the RSPA proposal will have on Fedco Electronics, Inc. and other similar businesses.

Fedco is a manufacturer and distributor of exact replacement batteries and battery packs for computers and other portable and handheld devices. We are classified in the industry as and a "value added distributor", purchasing cells from member companies of NEMA and BAJ. We are a small business currently employing 55 people. We incorporated in 1976 and have been distributing and assembling lithium primary cells and batteries since 1983 and lithium secondary batteries since 1996. There are approximately thirty other similar value added distributors in the United States all of which are closely held and many, like our company, are family owned. My estimate is that these companies have combined annual sales of around $325 million dollars and employ in the neighborhood of 1700 employees.

At the present time we manufacture about 200 lithium primary batteries and just under 100 lithium-ion battery packs. We distribute an additional 150 primary cells and 300 lithium-ion packs made by others. The batteries and battery packs that we assemble use UL listed components and comply with UL's listing service for Information Technology Equipment Including Electrical Business Equipment (NWGQ), and in the case of the lithium-ion and lithium-polymer battery packs contain all of the required redundant safety circuits and devices. During calendar 2001 Fedco shipped approximately 85,000 lithium-ion and lithium-polymer battery packs and over 100,000 lithium primary cells and batteries. Our packaging practices have always included separating cells and batteries so as to prevent short circuits and packed in strong outer packaging. We have never had a shipping incident. Also, we have been shipping lithium primary cells and lithium primary and lithium rechargeable batteries under the guidelines of the PRBA "Voluntary Air Transportation Communications Program" since it's adoption in early 2001 at an average cost of about $6.00 per package. We therefore have no objection to *§ 173.185(d)(1)(v)(A-D).*

Our company, however, strongly disagrees with inclusion of batteries in the proposed test methods and strongly disagrees with RSPA's statement, under III Rulemaking Analysis and Notices, *§ A(3),* Executive Order 12866 and DOT Regulatory Policies and Procedures which states ***".....For these reasons, the costs associated with these proposals are negligible .....***" . We also strongly disagree with the content of §(D) Regulatory Flexibility Act which states ***".....However, it is anticipated that the costs associated with the more stringent requirements of the proposal, such as the testing of lithium batteries would be incurred by lithium battery manufacturers, which are not small businesses.....***" *and* ***".....Therefore, RSPA certifies that this proposed rule would not have a significant economic impact on a substantial number of small entities....".***

Fedco is a family owned small business that manufactures and distributes exact replacement lithium primary and rechargeable battery packs. Our major competition is from importers who source most of their batteries from Taiwan, Hong Kong and China. We are constantly under pricing pressure from these sources. Although while we seem to retain market share by offering same day shipping, high quality products and an excellent warranty, the issue of price is still very close to the top of the buyers list. As mentioned earlier, we are just one of 30 peer companies here in the U.S., all with the same concerns.

If we ignore the hundreds of the existing products for a moment and look at new batteries in active design we have about twenty 1 and 2 cell lithium primary batteries and thirteen new lithium-ion packs containing from 2 to 12 cylindrical cells. Conservative estimated costs of having an independent testing facility, like UL, perform the proposed RSPA tests would be about $20,000.00 per battery plus the cost of the samples submitted. That's $660,000.00 for just the testing which, by the way, is about how much we're spending this year on new product development. To test our 450 existing primary and secondary battery designs by January, 2005 will cost about nine million dollars!

To require our company and the other U.S. value added distributors to comply with this proposal would be to destroy our industry!

My proposal would be to except batteries and battery packs from the proposed tests on the basis that only cells that have passed the tests will be allowed for use. My logic for this is that, based on the results of the drill and nail penetration tests that DOT performed last summer, there is substantial proof that the lithium-ion cells are relatively benign. By using UL listed components, appropriate protection devices and safety circuits and strong protective packaging our industry should be confident that an incident during shipping would be prevented. I believe that our company has demonstrated that we can ship lithium cells and batteries in large quantities without incident.

Your consideration on this matter would not only be greatly appreciated, but would allow our company and our peer companies to continue to grow, prosper and retain and grow employment.

I may be reached for comment between 08:00 and 17:00 central time zone.

Sincerely,

Stephen P. Victor, Jr. P.E.
President & COO
Fedco Electronics, Inc.
Tel: 800-542-9761
Fax: 920-922-8887
e-mail: svictor@fedcoelectronics.com
http://www.fedcoelectronics.com

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Intel Corporation
6505 W. Chandler Boulevard
Chandler, AZ 85226-3699
(602) 554-8080
www.intel.com

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VIA FEDERAL EXPRESS

June 10, 2002

Docket Management System
U.S. Department of Transportation
Room PL 401
400 Seventh Street, SW
Washington, DC 20590-0001

RE: Docket No. **RSPA-02-11989** (HM-224C) "Hazardous Materials; Transportation of Lithium Batteries" -5

Dear Sir or Madam:

Intel Corporation (Intel) is a global leader in semiconductor manufacturing and technology. Intel has twelve semiconductor fabrication facilities and twelve assembly and test facilities located worldwide. Intel manufactures silicon wafers in its fabrication facilities for use in its high-performance microprocessors, chipsets and flash memory components.

Intel also assembles and ships to its customers "systems" components including motherboards, servers, and networking gear, all of which contain small lithium batteries. U.S. Department of Transportation Research and Special Programs Administration's (RSPA's) recent Notice of Proposed Rulemaking (NPRM) concerning lithium batteries will significantly impact Intel's global transportation of these "systems" components. Intel appreciates the opportunity to comment on RSPA's proposed lithium battery transportation rule and offers the following remarks:

Intel requests that RSPA amend Section 173.185(d)(1)(v) to except batteries and cells contained in equipment. Failure to do so would lead to inconsistency between the Hazardous Materials Regulations (HMR) and international regulations and effectively encumber international commerce. Moreover, additional costs and regulatory burdens would be added to the transportation of products that do not pose a safety risk.

Section 173.185(d)(1)(v)
RSPA's proposed regulation of otherwise excepted small batteries and cells *in equipment* is inconsistent with the United Nations Recommendations on the Transport of Dangerous Goods (UN Recommendations). RSPA's proposed amendment to the small lithium cell and battery exception does not distinguish between individual cells and batteries and

those that are contained within equipment. Therefore, the marking, documentation and package testing requirements that RSPA proposes apply equally to a single package containing 5,000 individual small lithium batteries and to a single package containing 13 motherboards with a lithium battery securely fastened to each board (assuming that the 5,000 battery package does not exceed 30 kg gross mass).

Intel believes that this provision is misguided. As RSPA indicates in its preamble to the NPRM,

> "the amendments being proposed today would, in addition to increasing the level of safety associated with the transport of lithium batteries, *maintain the consistency of the HMR with the United Nations Recommendations on the Transport of Dangerous Goods (UN Recommendations) and, thus, facilitate the transport of these materials in international commerce."*

67 FR 15511 (April 2, 2002), *emphasis added.* This clearly is not the case. The UN Recommendations specifically except small batteries and cells contained in equipment from the marking, documentation and package testing requirements. UN Recommendations state,

> "***Except** when installed in equipment*, each package containing more than 24 lithium cells or 12 lithium batteries shall in addition meet the following [marking, documentation, packaging] requirements..."

UN Recommendations 12th Revised Edition, 3.3.1 Special Provision 188(e) *emphasis added.* Additionally, the International Civil Aviation Organization (ICAO) adopted verbatim the UN Recommendations exception for small batteries contained in equipment and will incorporate these changes in the 2003/2004 ICAO Technical Instructions. *See* Appendix B3, Amendments to the ICAO Technical Instructions - Part 3, Table 3-2 Special Provisions A45(e).

Therefore, RSPA's proposed regulation of small lithium batteries contained in equipment does not, in fact, harmonize with international regulations and will cause significant regulatory confusion and logistical hurdles, hindering the transportation of these materials in international commerce.

Executive Order 12866

Intel disagrees with RSPA that this proposed rule would impose no appreciable new cost on industry. Apparently, RSPA only evaluated future costs to the *lithium battery industry* when performing this analysis. Although the lithium battery industry is voluntarily complying with many of the elements of the proposed rule, this will be the first time that many companies in the electronic industry will face regulation of their product containing small, otherwise excepted lithium batteries. Based upon our analysis presented below,

Intel believes that the costs to the "non-battery" electronics manufacturing industry will be significant.

As an example, Intel shipped over 9 million motherboards containing small lithium batteries in 2001. This is only one of many products that Intel transports containing small lithium batteries. Based on this volume, Intel would incur the following new costs under proposed regulation §173.185(d)(1)(v):

- Increased Packaging Costs: While the strong outer packaging currently used adequately protects the product from damage incidental to transportation, and more importantly, the internal packaging design prevents the product from short-circuiting in transit, the outer packaging currently will not satisfy a 1.2 meter drop test.
- Package Marking: Markings affixed on each package.
- Training: Nearly 1000 distribution center employees will now be defined as "hazmat employees" due to loading, unloading and handling the regulated lithium batteries contained in equipment. All would need to be trained.
- Hazmat Surcharge: Most carriers have pricing structures that add additional costs to regulated hazmat shipments. Although RSPA does not propose to regulate these otherwise excepted batteries contained in equipment as a hazard class per se, the carriers will likely view the shipments as restricted articles. The result is a hazmat surcharge applied to these shipments
- Intangibles: Many carriers refuse to transport regulated hazmat or do not have the infrastructure to transport hazmat. Carrier selection strategy for this product could be severely limited and reduce the competitive advantage that currently exists for non-regulated freight.
- Unknown Costs: Warehouse building codes often require additional, costly life-safety and spill containment features for hazmat storage. Building insurance costs are expected to increase for hazmat storage.

The total new costs to Intel for transporting just this one product in compliance with RSPA's proposed regulation §173.185(d)(1)(v) are estimated to *exceed 2 million dollars per year*. This would be a *significant* new cost increase to Intel's global transportation of this small lithium battery-containing product.

Moreover, this cost would be incurred for products that, to Intel's knowledge, have no history of safety issues due to the presence of lithium batteries. Potential hazards associated with batteries contained within circuit boards and electronic products are at least several orders of magnitude below the potential hazards of bulk shipments of lithium batteries.

Intel strongly believes that RSPA's proposed rule §173.185(d)(1)(v) will significantly increase transportation costs for much of the electronics industry, place tremendous burden on international commerce and gain minimal increase in transportation safety. These unintended results are not consistent with RSPA's stated goals of achieving global transportation harmonization and increased hazmat transportation safety.

Please feel free to contact me with any questions that you might have about Intel's position on this docket. Intel appreciates RSPA's consideration of our comments.

Sincerely,

Chris Vamos
Intel Corporation
Corporate Hazardous Materials Transportation
(480) 552-2084
chris.vamos@intel.com